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FRIDAY, JUNE 21, 1895.

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ON THE DISTRIBUTION AND THE SECULAR VARIATION OF TERRESTRIAL MAGNETISM.

IN two papers* read before the Philosophical Society of Washington, May 25th, the following main results were obtained:

*'On the Secular Variation of Terrestrial Magnetism' and 'A Preliminary Analysis of the Problem of Terrestrial Magnetism and its Variations.'

The minimum change in declination along a parallel of latitude at any particular time, and the minimum average secular change along a parallel of latitude during a given interval of time occur near the equator; both quantities generally increase on leaving the equator.

Exactly the reverse is the case with regard to the inclination, viz.:—

The maximum change in inclination along a parallel of latitude at any particular time, and the maximum average secular change along a parallel of latitude during a given interval of time occur near the equator; both quantities generally diminish on leaving the equator.

These laws were established with the aid of data scaled from magnetic charts from 1780 to 1885 at points 20° distant in longitude and in latitudes 60°N, 40°N, 20°N, equator, 20°S, 40°S and 60°S. They again point to the same conclusion reached previously by the writer in a somewhat different way, namely, *that the distribution and the secular variation of terrestrial magnetism appear to be closely related; they are subject to similar laws. It is hence probable that they are both to be referred primarily to the same cause. This common cause seems to be connected in some way with the earth's rotation.*

If we regard the earth as uniformly magnetized, having its magnetic poles coincident with the geographical poles, and take the X axis of a system of coördinates whose origin is in the center of the earth, parallel to the magnetic axis, we shall get the fol-